WHAT IS CLAIMED IS:

1. A facial image recognition apparatus comprising;

a plurality of illuminations radiating light toward the face of a human recognition object,

a camera for photographing a facial image of the human recognition object toward which the light from the plurality of illuminations is radiated,

a feature value extraction section for extracting a feature value of the face of the human recognition object from a facial image photographed by the camera, and

a recognition section for collating the feature value extracted by the feature value extraction section with a standard feature value registered in advance so as to recognize a facial image of the human recognition object.

2. The facial image recognition apparatus as set forth in claim 1, wherein the plurality of illuminations are composed of a first illumination for radiating light toward the face of the human recognition object and a second illumination for radiating light toward the face of the human recognition object, said first illumination is installed in an upper right diagonal part, an upper left diagonal part, a front right diagonal part, or a front left diagonal part of the camera, taken in the

direction that the human recognition object looks, and said second illumination is installed below the camera.

3. The facial image recognition apparatus as set forth in claim 2, wherein the illuminance of the light radiated from the first illumination is greater than that of the light radiated from the second illumination.

4. The facial image recognition apparatus as set forth in claim 2, wherein the total value of the illuminance of the light radiated from the first illumination and the illuminance of the light radiated from the second illumination is greater than the illuminance of the light other than the light from the first and second illuminations radiated to the human recognition object.

5. The facial image recognition apparatus as set forth in claim 1, further comprising an information input section for inputting information related to the human recognition object, wherein the recognition section searches a feature value corresponding to the information inputted by the information input section from the standard feature value registered in advance and collates the searched feature value with the feature value extracted by the feature value extraction section so as to recognize a facial image of the human recognition object.

6. The facial image recognition apparatus as set

forth in claim 1, further comprising an outer light
interruption section for interrupting light other than
the light from the plurality of illuminations radiated
to a facial part of the human recognition object.

5   7.   The facial image recognition apparatus as set
forth in claim 1, further comprising a display section
for displaying the facial image photographed by
the camera and displaying information showing an
appropriate size of a facial image.

10   8.   The facial image recognition apparatus as set
forth in claim 2, wherein
       the first illumination is installed in a front
right diagonal part or a front left diagonal part of
the camera, taken in the direction that the human
15 recognition object looks, and
       the camera is installed below a position of the
face of the human recognition object so as to
photograph a facial image of the human recognition
object in an upward direction.

20   9.   The facial image recognition apparatus as set
forth in claim 1, wherein
       the plurality of illuminations sequentially
operate in a predetermined order and time interval,
       the camera photographs facial images of the human
25 recognition object one after another by synchronizing
sequential operations of the plurality of
illuminations,

the feature value extraction section extracts
feature values of the face of the human recognition
object from a plurality of facial images sequentially
inputted from the camera, respectively, and

5   the recognition section collates a plurality of
feature values extracted by the feature value
extraction section with a standard feature value
registered in advance, respectively, so as to recognize
a facial image of the human recognition object.

10   10. The facial image recognition apparatus as set
forth in claim 9, further comprising a registration
section for registering the plurality of feature values
extracted by the feature value extraction section as
standard feature values, respectively, at a time of

15   registration of a facial image, wherein the recognition
section collates a plurality of feature values
extracted by the feature value extraction section with
a plurality of standard feature values registered by
the registration section, respectively, at a time of

20   collation of a facial image, so as to recognize
a facial image of the human recognition object.

11. A facial image recognition apparatus
comprising a facial image registration section for
performing registration processing of a facial image

25   and a facial image recognition section connected to
the facial image registration section to perform
recognition processing of a facial image, wherein

the facial image registration section comprises a plurality of first illuminations radiating light toward the face of a human registration object, a first camera for photographing a facial image of the human

5   registration object, a first feature value extraction section for extracting a feature value of the face of the human registration object from a facial image photographed by the first camera, and a memory section for storing a feature value extracted by the first

10   feature value extraction section as a standard feature value, and

the facial image recognition section comprises a plurality of second illuminations radiating light toward the face of a human recognition object, a second

15   camera for photographing a facial image of the human recognition object, a second feature value extraction section for extracting a feature value of the face of the human recognition object from a facial image photographed by the second camera, and a recognition

20   section for collating a feature value extracted by the second feature value extraction section with a feature value stored in the memory section of the facial image registration section so as to recognize a facial image of the human recognition object.

25   12.   The facial image recognition apparatus as set forth in claim 11, wherein

the facial image registration section further

comprises a first display section for displaying
a facial image photographed by the first camera, and
   the facial image recognition section further
comprises a second display section for displaying
a facial image photographed by the second camera.

   13. A pass control apparatus recognizing a facial
image of a passenger to control a pass of the
passenger, said pass control apparatus comprising
   a plurality of illuminations radiating light
toward the face of the passenger,
   a camera for photographing a facial image of the
passenger toward which the light from the plurality of
illuminations is radiated,
   a feature value extraction section for extracting
a feature value of the face of the passenger from
a facial image photographed by the camera,
   a recognition section for collating the feature
value extracted by the feature value extraction section
with a standard feature value registered in advance so
as to recognize a facial image of the passenger, and
   a pass control section for controlling a pass of
the passenger according to a recognition result by the
recognition section.

   14. The pass control apparatus as set forth in
claim 13, wherein the plurality of illuminations are
composed of a first illumination for radiating light
toward the face of the passenger and a second

illumination for radiating light toward the face of
the passenger, said first illumination is installed in
an upper right diagonal part, an upper left diagonal
part, a front right diagonal part, or a front left

5   diagonal part of the camera, taken in the direction
that the passenger looks, and said second illumination
is installed below the camera.

    15.   The pass control apparatus as set forth in
claim 13, further comprising an information input

10   section for inputting information related to the human
recognition object, wherein the recognition section
searches a feature value corresponding to the
information inputted by the information input section
from the standard feature value registered in advance

15   and collates the searched feature value with the
feature value extracted by the feature value extraction
section so as to recognize a facial image of the human
recognition object.

    16.   The pass control apparatus as set forth in

20   claim 13, further comprising an outer light interrup-
tion section for interrupting light other than the
light from the plurality of illuminations radiated to
a facial part of the passenger.

    17.   The pass control apparatus as set forth in

25   claim 13, further comprising a display section for
displaying the facial image photographed by the camera
and displaying information showing an appropriate size

of a facial image.

18. The pass control apparatus as set forth in claim 14, wherein

the first illumination is installed in a front right diagonal part or a front left diagonal part of the camera, taken in the direction that the human recognition object looks, and

the camera is installed below a position of the face of the human recognition object so as to photograph a facial image of the human recognition object in an upward direction.

19. The pass control apparatus as set forth in claim 13, wherein

the plurality of illuminations sequentially operate in a predetermined order and time interval,

the camera photographs facial images of the passenger one after another by synchronizing sequential operations of the plurality of illuminations,

the feature value extraction section extracts feature values of the face of the passenger from a plurality of facial images sequentially inputted from the camera, respectively, and

the recognition section collates a plurality of feature values extracted by the feature value extraction section with a standard feature value registered in advance, respectively, so as to recognize a facial image of the passenger.

20. The pass control apparatus as set forth in
claim 19, further comprising a registration section for
registering the plurality of feature values extracted
by the feature value extraction section as standard
feature values, respectively, at a time of registration
of a facial image, wherein the recognition section
collates a plurality of feature values extracted by the
feature value extraction section with a plurality of
standard feature values registered by the registration
section, respectively, at a time of collation of
a facial image, so as to recognize a facial image of
the passenger.

21. A pass control apparatus recognizing a facial
image of a passenger to control a pass of the
passenger, said pass control apparatus comprising
a facial image registration section for performing
registration processing of a facial image and a facial
image recognition section connected to the facial image
registration section to perform recognition processing
of a facial image, wherein

the facial image registration section comprises
a plurality of first illuminations radiating light
toward the face of a human registration object, a first
camera for photographing a facial image of the human
registration object, a first feature value extraction
section for extracting a feature value of the face of
the human registration object from a facial image

photographed by the first camera, and a memory section
for storing a feature value extracted by the first
feature value extraction section as a standard feature
value, and

5   the facial image recognition section comprises
a plurality of second illuminations radiating light
toward the face of the passenger, a second camera for
photographing a facial image of the passenger, a second
feature value extraction section for extracting a
10   feature value of the face of the passenger from a
facial image photographed by the second camera, a
recognition section for collating a feature value
extracted by the second feature value extraction
section with a feature value stored in the memory
15   section of the facial image registration section so as
to recognize a facial image of the passenger, and a
pass control section for controlling a pass of the
passenger according to a recognition result by the
recognition section.

20   22.   The pass control apparatus as set forth in
claim 21, wherein
       the facial image registration section further
comprises a first display section for displaying
a facial image photographed by the first camera, and
25   the facial image recognition section further
comprises a second display section for displaying
a facial image photographed by the second camera.

23. The pass control apparatus as set forth in claim 13, further comprising a record device for recording an image photographed by the camera.

24. The pass control apparatus as set forth in claim 23, wherein

the recognition section sends a recognition result to the record device, and

the record device records a recognition result by the recognition section along with an image photographed by the camera.

25. The pass control apparatus as set forth in claim 13, further comprising an image transfer section for transferring an image photographed by the camera to a display device for monitoring.

26. A facial image recognition apparatus comprising

a camera installed so that a human recognition object positions oneself on a floor face having at least one or more differences in elevation and photographing a facial image of the human recognition object positioning oneself on a floor face of a height according to the height of the human recognition object,

a display section for displaying a facial image of the human recognition object photographed by the camera,

a feature value extraction section for extracting

a feature value of the face of the human recognition

object from a facial image photographed by the camera,

and

    a recognition section for collating the feature

5   value extracted by the feature value extraction section

with a standard feature value registered in advance so

as to recognize a facial image of the human recognition

object.

    27. The facial image recognition apparatus as set

10   forth in claim 26, further comprising an information

input section for inputting information related to the

human recognition object, wherein the recognition

section searches a feature value corresponding to the

information inputted by the information input section

15   from the standard feature value registered in advance

and collates the searched feature value with the

feature value extracted by the feature value extraction

section so as to recognize a facial image of the human

recognition object.

20   28. The facial image recognition apparatus as set

forth in claim 26, further comprising a posture guide

for supporting a hand in a state wherein the human

recognition object bends one's lower back, wherein the

camera photographs in an upward direction a facial

25   image of the human recognition object in a posture in

which one's hand is supported by the posture guide.

    29. The facial image recognition apparatus as set

forth in claim 26, further comprising a posture guide for supporting a hand in a state wherein the human recognition object bends one's lower back, wherein the camera photographs in an upward direction a facial

5 image of the human recognition object in a posture in which one's hand is supported by the posture guide, and the display section is installed so that the human recognition object can look at a display screen in a state wherein the face of the human recognition object

10 whose hand is supported by the posture guide faces downward.

30. The facial image recognition apparatus as set forth in claim 29, wherein the display section is installed so that an angle of the display screen

15 displayed for the human recognition object with respect to the floor face becomes more obtuse than the angle of the photographing direction of the camera with respect to the floor face.

31. The facial image recognition apparatus as set

20 forth in claim 26, further comprising an infrared light interruption section for interrupting an infrared wavelength region of natural light, wherein the camera has a sensitivity only in the infrared wavelength region and photographs a facial image of the human

25 recognition object in a state wherein an infrared wavelength region of the outer light is interrupted by the infrared light interruption section.

32. The facial image recognition apparatus as set forth in claim 31, further comprising an infrared illumination for radiating light in an infrared wavelength region toward the human recognition object.

33. A pass control apparatus recognizing a facial image of a passenger to control a pass of the passenger, said pass control apparatus comprising

a camera installed so that the passenger positions oneself on a floor face having at least one or more differences in elevation and photographing a facial image of the passenger positioning oneself on a floor face of a height according to the height of the passenger,

a display section for displaying a facial image of the passenger photographed by the camera,

a feature value extraction section for extracting a feature value of the face of the passenger from a facial image photographed by the camera,

a recognition section for collating the feature value extracted by the feature value extraction section with a standard feature value registered in advance so as to recognize a facial image of the passenger, and

a pass control section for controlling a pass of the passenger according to a recognition result by the recognition section.

34. The pass control apparatus as set forth in claim 33, further comprising an information input

section for inputting information related to the passenger, wherein the recognition section searches a feature value corresponding to the information inputted by the information input section from the standard

5　feature value registered in advance and collates the searched feature value with the feature value extracted by the feature value extraction section so as to recognize a facial image of the passenger.

　　35.　The pass control apparatus as set forth in

10　claim 33, further comprising a posture guide for supporting a hand in a state wherein the passenger bends one's lower back, wherein the camera photographs in an upward direction a facial image of the passenger in a posture in which one's hand is supported by the

15　posture guide.

　　36.　The pass control apparatus as set forth in claim 33, further comprising a posture guide for supporting a hand in a state wherein the passenger bends one's lower back, wherein the camera photographs

20　in an upward direction a facial image of the passenger in a posture in which one's hand is supported by the posture guide, and the display section is installed so that the passenger can look at a display screen in a state wherein the face of the passenger whose hand is

25　supported by the posture guide faces downward.

　　37.　The pass control apparatus as set forth in claim 36, wherein the display section is installed so

that an angle of the display screen displayed for the
passenger with respect to the floor face becomes more
obtuse than the angle of the photographing direction of
the camera with respect to the floor face.

5   38. The pass control apparatus as set forth in
claim 33, further comprising an infrared light
interruption section for interrupting an infrared
wavelength region of natural light, wherein the camera
has a sensitivity only in the infrared wavelength
10   region and photographs a facial image of the passenger
in a state wherein an infrared wavelength region of the
outer light is interrupted by the infrared light
interruption section.

      39. The pass control apparatus as set forth in
15   claim 38, further comprising an infrared illumination
for radiating light in an infrared wavelength region
toward the passenger.